

IEEE Std 100-1996

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# **The IEEE Standard Dictionary of Electrical and Electronics Terms**

## **Sixth Edition**

**Standards Coordinating Committee 10, Terms and Definitions**  
**Jane Radatz, Chair**

This standard is one of a number of information technology dictionaries being developed by standards organizations accredited by the American National Standards Institute. This dictionary was developed under the sponsorship of voluntary standards organizations, using a consensus-based process.

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## Introduction

Since the first edition in 1941 of the American Standard Definitions of Electrical Terms, the work now known as IEEE Std 100, The IEEE Standard Dictionary of Electrical and Electronics Terms, has evolved into the unique compendium of terms that it is today.

The current edition includes all terms defined in approved IEEE standards through December 1996. Terms are categorized by their technical subject area. They are also associated with the standards or publications in which they currently appear. In some cases, terms from withdrawn standards are included when no current source can be found. Earlier editions of IEEE Std 100 included terms from sources other than IEEE standards, such as technical journals, books, or conference proceedings. These terms have been maintained for the sake of consistency and their sources are listed with the standards in the back of the book.

The practice of defining terms varies from standard to standard. Many working groups that write standards prefer to work with existing definitions, while others choose to write their own. Thus terms may have several similar, although not identical, definitions. Definitions have been combined wherever it has been possible to do so by making only minor editorial changes. Otherwise, they have been left as written in the original standard.

Users of IEEE Std 100 occasionally comment on the surprising omission of a particular term commonly used in an electrical or electronics field. This occurs because the terms in IEEE Std 100 represent only those defined in the existing or past body of IEEE standards. To respond to this, some working groups obtain authorization to create a glossary of terms used in their field. All existing, approved standard glossaries have been incorporated into this edition of IEEE Std 100, including the most current glossaries of terms for computers and power engineering.

IEEE working groups are encouraged to refer to IEEE Std 100 when developing new or revised standards to avoid redundancy. They are also encouraged to investigate deficiencies in standard terms and create standard glossaries to alleviate them.

The sponsoring body for this document was Standards Coordinating Committee 10 on Definitions (SCC10), which consisted of the following members:

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Assistance was provided by the IEEE Standards editorial staff.

## How to use this dictionary

The terms defined in this dictionary are listed in *letter-by-letter* alphabetical order. Spaces are ignored in this style of alphabetization, so *cable value* will come before *cab signal*. Descriptive categories associated with the term in earlier editions of IEEE Std 100 will follow the term in parentheses. New categories appear after the definitions (see Categories, below), followed by the designation of the standard or standards that include the definition. If a standard designation is followed by the letter s, it means that edition of the standard was superseded by a newer revision and the term was not included in the revision. If a designation is followed by the letter w, it means that edition of the standard was withdrawn and not replaced by a revision. A bracketed number refers to the non-IEEE standard sources given in the back of the book.

Acronyms and abbreviations are no longer listed in a separate section in the dictionary; rather, they are incorporated alphabetically with other terms. Each acronym or abbreviation refers to its expanded term, where it is defined. Acronyms and abbreviations for which no definition was included in past editions have been deleted from this edition of IEEE Std 100.

Abstracts of the current set of approved IEEE standards are provided in the back of the book. It should be noted that updated information about IEEE standards can be obtained at any time from the IEEE Standards World Wide Web site at <http://standards.ieee.org/>.

## Categories

The category abbreviations that are used in this edition of IEEE Std 100 are defined below. This information is provided to help elucidate the context of the definition. Older terms for which no category could be found have had the category "Std100" assigned to them. Note that terms from sources other than IEEE standards, such as the National Electrical Code® (NEC®) or the National Fire Protection Association, may not be from the most recent editions; the reader is cautioned to check the latest editions of all sources for the most up-to-date terminology.

## Thomson heat

the material of the conductor. A consequence of this effect is that if a current exists in a conductor between two points at different temperatures, heat will be absorbed or liberated depending on the material and on the sense of the current. 2. In a nonhomogeneous conductor, the Peltier effect and the Thomson effect cannot be separated. *See also*: thermoelectric device. (ED) [46]

**Thomson heat** The thermal energy absorbed or evolved as a result of the Thomson effect. *See also*: thermoelectric device. (ED) [46]

**thrashing** A state in which a computer system is expending most or all of its resources on overhead operations, such as swapping data between main and auxiliary storage, rather than on intended computing functions. (C) 610.12-1990

**thread (1) (control)** A control function that provides for maintained operation of a drive at a preset reduced speed such as for setup purposes. *See also*: electric drive. (IA) [60]

(2) **(data management)** In a tree, a set of link fields, one in each node, each of which points to the successor or predecessor of that node with respect to a particular traversal order. (C) 610.5-1990

(3) A single flow of control within a process. Each thread has its own thread ID, scheduling priority and policy, *errno* value, thread-specific key/value bindings, and the required system resources to support a flow of control. Anything whose address may be determined by a thread, including but not limited to static variables, storage obtained via *malloc()*, directly addressable storage obtained through implementation-supplied functions, and automatic variables shall be accessible to all threads in the same process. (C/PA) 9945-1-1996

(4) A single sequential flow of control within a process. (C/PA) 1224.2-1993; 1326.2-1993; 1327.2-1993; 1328.2-1993; 14252-1996

**threaded coupling (rigid steel conduit)** An internally threaded steel cylinder for connecting two sections of rigid steel conduit. (EEC) [28]

**threaded tree** A tree whose nodes contain link fields for one or more threads, allowing nonrecursive traversal of the tree. *See also*: doubly-threaded tree; left-threaded tree; right-threaded tree; triply-threaded tree. (C) 610.5-1990

**thread ID** A unique value of type *pthread\_t* that identifies each thread during its lifetime in a process. (C/PA) 9945-1-1996

**threading line (conductor stringing equipment)** A lightweight flexible line, normally manila or synthetic fiber rope, used to lead a conductor through the bullwheels of a tensioner or pulling line through a bull wheel puller. *Synonyms*: bull line; threading rope. (PE/T&D) 524-1992

**threading rope** *See*: threading line.

**thread list** An ordered set of runnable threads that all have the same ordinal value for their priority. The ordering of threads on the list is determined by a scheduling policy or policies. The set of thread lists includes all runnable threads in the system. (C/PA) 9945-1-1996

**thread of control** A sequence of instructions executed by a conceptual sequential subprogram, independent of any programming language. More than one thread of control may execute concurrently, interleaved on a single processor, or on separate processors. The conceptual threads of control in an Ada application are Ada tasks. They may, but need not, correspond to the POSIX threads defined in POSIX.1c. (C/PA) 1003.5b-1995

**thread-safe** A function that may be safely invoked concurrently by multiple threads. Each function defined by this standard is thread-safe unless explicitly stated otherwise. An example is any "pure" function (a function that holds a mutex locked while it is accessing static storage or objects shared among threads). (C/PA) 9945-1-1996

**thread-specific data key** A process global handle of type *pthread\_key\_t* that is used for naming thread-specific data. Although the same key value may be used by different threads, the values bound to the key by *pthread\_setspecific()*

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## three-phase circuit

and accessed by *pthread\_getspecific()* are maintained on a per-thread basis and persist for the life of the calling thread. (C/PA) 9945-1-1996

**threat (1)** A potential violation of security. (C/LM) 802.10-1992

(2) Means by which a system may be adversely affected. Threats include both inadvertent and malicious actions. (BA/C) 896.3-1993

**three-address** Pertaining to an instruction code in which each instruction has three address parts. Also called triple-address. In a typical three-address instruction the addresses specify the location of two operands and the destination of the result, and the instructions are taken from storage in a preassigned order. *See also*: two-plus-one address. (C) 162-1963w

**three-address instruction (1)** A computer instruction that contains three address fields. For example, an instruction to add the contents of locations A and B, and place the results in location C. *Contrast*: four-address instruction; one-address instruction; two-address instruction; zero-address instruction. (C) 610.12-1990

(2) An instruction containing three addresses. *Synonym*: triple-address instruction. *See also*: address format. (C) 610.10-1994

**three-bit byte** *See*: triplet.

**three-conductor bundle** *See*: bundle.

**three-dimensional graphics** The presentation of data on a two-dimensional display surface so that it appears to represent a three-dimensional model, and can be viewed from any position. *Note*: Each coordinate of the model contains a triplet of information; for example, x, y, and z in the Cartesian coordinate system. (C) 610.6-1991

**three-dimensional hardware** A graphical display processor that accepts three-dimensional information as input and generates an image directly rather than using a projection transformation. (C) 610.6-1991

**three-dimensional priority** The property possessed by a line or surface that is in front of another line or surface from the viewer's perspective. (C) 610.6-1991

**three-dimensional radar (navigation aid terms)** A radar capable of producing three-dimensional position data on a multiplicity of targets. (AE) 172-1983w, 686-1990w

**3GL** *See*: high-order language.

**three-input adder** *See*: full adder.

**three-level address** *See*: n-level address.

**3-of-9 bar code** A variable length, bidirectional, discrete, self-checking, alpha-numeric bar code. Its basic data character set contains 43 characters: 0 to 9, A to Z, -, ., /, +, \$, %, and space. Each character is composed of 9 elements: 5 bars and 4 spaces. Three of the nine elements are wide (binary value 1) and six are narrow (binary value 0). A common character (\*) is used exclusively for both a start and stop character. (PE) C57.12.35-1996

**three-phase ac fields (electric and magnetic fields from ac power lines)** Three-phase transmission lines generate a three-phase field whose space components are not in phase. The field at any point can be described by the field ellipse, that is, by the magnitude and direction of the semi-major axis and the magnitude and direction of its semi-minor axis. In a three-phase field, the electric field at large distances  $\geq 15$  meters (m) away from the outer phases (conductors) can frequently be considered a single-phase field because the minor axis of the electric field ellipse is only a fraction (less than 10%) of the major axis when measured at a height of 1 m. Similar remarks apply for the magnetic field. *See also*: electric field strength. (PE/T&D) 644-1979s

**three-phase circuit (electric installations on shipboard) (power and distribution transformers)** A combination of circuits energized by alternating electromotive forces which differ in phase by one-third of a cycle (120 degrees). In practice, the phases may vary several degrees from the specified angle. (IA/PE) 45-1983r, C57.12.80-1978r